

Amendment to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (canceled).

Claim 2 (currently amended): The method of claim 30 + wherein the network element is in communication with an optical network.

Claim 3 (currently amended): The method of claim 30 + wherein said network management includes operations, administration, and maintenance.

Claim 4 (original): The method of claim 3 wherein the header comprises an operations, administration, and maintenance channel and further comprising transmitting operations, administration, and maintenance information from the network element to a network management station.

Claim 5 (original): The method of claim 3 wherein the header comprises an operations, administration, and maintenance channel and further comprising transmitting operations, administration, and maintenance information from the network element to other network elements.

Claim 6 (original): The method of claim 3 wherein said network management further includes provisioning of paths within the network.

Claim 7 (original): The method of claim 3 wherein said network management further includes performance monitoring of paths within the network.

Claim 8 (currently amended): The method of claim 31 + wherein said header includes the same number or a fewer number of bytes than the preamble of the Ethernet packet so that the size of the packet is not increased when the preamble is replaced by the header.

Claim 9 (original): The method of claim 8 wherein said header comprises 8 bytes.

Claim 10 (canceled).

Claim 11 (canceled).

Claim 12 (currently amended): The method of claim 41 + wherein said header includes an error-detecting code word to detect errors in the header.

Claim 13 (original): The method of claim 12 wherein said error detecting code is a cyclic redundancy check field.

Claim 14 (currently amended): The method of claim 31 + wherein said header includes a message channel.

Claim 15 (original): The method of claim 14 further comprising using HDLC on the message channel.

Claim 16 (currently amended): The method of claim 37 + wherein said header includes packet type information.

Claim 17 (original): The method of claim 16 wherein the packet type information identifies whether the packet is an idle packet or a data packet.

Claim 18 (original): The method of claim 16 wherein the packet type information identifies that the Ethernet packet has been modified.

Claim 19 (currently amended): The method of claim 37 + further comprising providing sideband communication within the network via a sideband channel.

Claim 20 (original): The method of claim 19 further comprising IP routing over the sideband channel to enable communication of management data.

Claim 21 (original): The method of claim 19 further comprising using the sideband channel to perform topology discovery.

Claim 22 (canceled).

Claim 23 (canceled).

Claim 24 (canceled).

Claim 25 (canceled).

Claim 26 (canceled).

Claim 27 (canceled).

Claim 28 (canceled).

Claim 29 (canceled).

Claim 30 (currently amended): ~~The method of claim 29 further comprising~~ A method for conveying network management information within a network, the method comprising:

receiving an Ethernet packet at a network element;
modifying the Ethernet packet by inserting a header in place of the preamble within the packet while maintaining the format of the Ethernet packet, said header configured to provide support for network management;
transmitting the modified packet from the network element;
transmitting a defect indicator within said header; and
switching a receiving node to a backup path.

Claim 31 (currently amended): ~~The method of claim 1 further comprising~~ A method for conveying network management information within a network, the method comprising:

receiving an Ethernet packet at a network element;
modifying the Ethernet packet by inserting a header in place of the preamble within the packet while maintaining the format of the Ethernet packet, said header configured to provide support for network management;
transmitting the modified packet from the network element; and
providing an automatic protection switching subchannel within said header.

Claim 32 (currently amended): The method of claim 37 + further comprising multiplexing packet streams at the network element.

Claim 33 (original): The method of claim 32 wherein said header comprises a subinterface identifier which identifies an originating port for each of the packets.

Claim 34 (original): The method of claim 32 further comprising demultiplexing the packet streams at a receiving node.

Claim 35 (currently amended): The method of claim 37 + wherein the network comprises a plurality of network elements.

Claim 36 (original): The method of claim 35 further comprising a network management station and wherein the management station has access to said plurality of network elements via said header.

Claim 37 (currently amended): ~~The method of claim 35 further comprising~~ A method for conveying network management information within a network comprising a plurality of network elements, the method comprising:
receiving an Ethernet packet at a network element;
modifying the Ethernet packet by inserting a header in place of the preamble within the packet while maintaining the format of the Ethernet packet, said header configured to provide support for network management;
transmitting the modified packet from the network element; and
communicating routing table information among said plurality of network elements via said header.

Claim 38 (canceled).

Claim 39 (canceled).

Claim 40 (currently amended): The method of claim 37 + wherein the network element is in communication with at least one router.

Claim 41 (currently amended): A method for supporting management of a network, the method comprising:

receiving a modified Ethernet packet at a network element, the modified packet comprising a header configured to provide support for network management;

replacing the header in the modified packet with a preamble within the packet to create an Ethernet packet; and

transmitting the Ethernet packet from the network element;

wherein the header is the same size as the preamble.

Claim 42 (original): The method of claim 41 wherein the network element is located at an egress boundary of the network.

Claim 43 (original): The method of claim 41 wherein receiving a modified Ethernet packet comprises receiving the modified packet from a transit network element located within the network.

Claim 44 (original): The method of claim 43 wherein the network element is in communication with an optical network.

Claim 45 (currently amended): An Ethernet network system for conveying network management information, the system having a network element comprising:

a port controller operable to receive an Ethernet packet, modify the Ethernet packet by inserting a header in place of the preamble within the packet while maintaining the format of the Ethernet packet ~~Ethernet frame~~, said header configured to provide support for network management, the port controller comprising an optical to electrical converter and a CDL handler operable to insert the header into the packet; and

a network element controller coupled to the port controller and operable to generate and consume network management information.

Claim 46 (canceled).

Claim 47 (original): The system of claim 45 further comprising a crossconnect configured to receive the packet from the port controller and select an egress port controller to transmit the packet from the network element.

Claim 48 (original): The system of claim 45 further comprising a second network element positioned at an egress boundary of the network, the second network element comprising:

a port controller operable to receive the modified packet and replace the header with the preamble; and

a network element controller coupled to the port controller and operable to generate and consume network management information.

Claim 49 (currently amended): ~~The system of claim 48 wherein the port controller comprises~~ An Ethernet network system for conveying network management information, the system having a network element comprising:

a port controller operable to receive an Ethernet packet, modify the Ethernet packet by inserting a header in place of the preamble within the packet while maintaining the format of the Ethernet packet, said header configured to provide support for network management, the port controller comprising a CDL handler and an electrical to optical converter; and

a network element controller coupled to the port controller and operable to generate and consume network management information.

Claim 50 (canceled).

Claim 51 (original): The system of claim 48 wherein the second network element is a downstream network element and further comprising a transit network element operable to receive the modified packet, modify the header, and forward the packet to the second network element.

Claim 52 (original): The system of claim 45 wherein the header comprises:

- an operations, administration, and maintenance field;
- a message channel;
- an application specific field; and
- a header error detection field.

Claim 53 (currently amended): A computer program product for conveying network management information within a network, the product comprising:

code that modifies an Ethernet packet by inserting a header in place of the Ethernet preamble within the packet while maintaining the format of the Ethernet packet ~~Ethernet frame~~, said header providing support for network management;

code that transmits the modified packet from a network element ~~in the Ethernet frame~~;

code that communicates routing table information among said plurality of network elements via said header; and

a computer-readable storage medium for storing the codes.

Claim 54 (original): The computer program product of claim 53 further comprising code that removes said header from the modified packet and replaces the preamble.

Claim 55 (original): The computer program product of claim 53 further comprising code that provides sideband communication within the network.

Claim 56 (original): The computer program product of claim 53 further comprising code that provides each of the packets with a subinterface identifier within said header to allow multiplexing of packet streams.

Claim 57 (canceled).

Claim 58 (canceled).

Claim 59 (canceled).

Claim 60 (canceled).

Claim 61 (canceled).

Claim 62 (canceled).

Claim 63 (canceled).

Claim 64 (canceled).

Claim 65 (currently amended): A system for conveying network management information in an Ethernet system, the system comprising:
means for receiving an Ethernet packet at a network element;
means for modifying the preamble of the Ethernet packet to support network management while maintaining the Ethernet frame; ~~and~~
means for transmitting the modified Ethernet packet; and
means for communicating routing table information among said plurality of network elements via said header.

Claim 66 (original): The system of claim 65 wherein means for modifying the packet comprises hardware.

Claim 67 (original): The system of claim 65 wherein means for modifying the packet comprises microcode.

Claim 68 (original): The system of claim 65 wherein means for modifying the packet comprises software.

Claim 69 (original): The system of claim 65 wherein means for modifying the packet comprises photonic logic.

Claim 70 (original): The system of claim 65 wherein the network element is located at an ingress boundary of the network.

Claim 71 (original): The system of claim 70 wherein said means for modifying the preamble comprises means for replacing an Ethernet preamble with a CDL header.

Claim 72 (original): The system of claim 65 wherein the network element is located at an egress boundary of the network.

Claim 73 (original): The system of claim 65 wherein said means for modifying the preamble comprises means for replacing a CDL header with an Ethernet preamble.

Claim 74 (original): The system of claim 65 wherein the network element is a transit network element.

Claim 75 (canceled).

Claim 76 (canceled).

Claim 77 (canceled).

Claim 78 (canceled).

Claim 79 (canceled).

Claim 80 (previously presented): The method of claim 45 wherein the port controller and the network element are configured for receiving and sending Ethernet frames.

Claim 81 (canceled).

Claim 82 (currently amended): The method of claim 53 wherein maintaining the format of the Ethernet packet frame comprises maintaining an the interpacket gap.

Claim 83 (previously presented): The method of claim 53 wherein the network element is configured for receiving and transmitting Ethernet frames.

Claim 84 (previously presented): The method of claim 41 wherein the network is a WAN.

Claim 85 (canceled).

Claim 86 (previously presented): The method of claim 41 wherein transmitting the Ethernet packet comprises transmitting the Ethernet packet without a SONET frame.

Claim 87 (previously presented): The method of claim 41 wherein transmitting the Ethernet packet comprises transmitting the Ethernet packet without SONET overhead.

Claim 88 (previously presented): The method of claim 41 wherein replacing the header comprises maintaining a minimum interpacket gap.

Claim 89 (currently amended): ~~The method of claim 41 further comprising~~ A method for supporting management of a network, the method comprising:
receiving a modified Ethernet packet at a network element, the modified packet comprising a header configured to provide support for network management;
replacing the header in the modified packet with a preamble within the packet to create an Ethernet packet;
transmitting the Ethernet packet from the network element; and
transmitting back-to-back idle packets and separating the idle packets with a spacing equal to at least two times the minimum transmit interpacket gap.

Claim 90 (previously presented): The method of claim 41 wherein replacing the header in the modified packet comprises preserving the Ethernet frame structure.

Claim 91 (new): An apparatus for conveying network management information within a network comprising a plurality of network elements, comprising:
means for receiving an Ethernet packet at a network element;

means for modifying the Ethernet packet by inserting a header in place of the preamble within the packet while maintaining the format of the Ethernet packet, said header configured to provide support for network management;

means for transmitting the modified packet from the network element;
and

means for communicating routing table information among said plurality of network elements via said header.